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Currency Bars in Great-Britain

Typology and Function

Les lingots de fer protohistoriques en Grande Bretagne, typologie et fonction

Peter CREW *

Introduction

There have been numerous discussions of British currency bars since their recognition at the beginning of this century, each introducing new ideas: Smith 1905 (two types, weights, currency); Fox 1946 (possible source in the Forest of Dean); Tylecote 1962 (metallurgy, bars as moods for making swords); Allen 1967 (three main types); Hedges and Salter 1979 (slag inclusion analysis, use of different ores); Ehrenreich 1985 (metal analyses, high/low phosphorus bar types, use as stock); Hingley 1990 (archaeological context, ritual deposits at boundaries of forts and settlements); Crew 1991 (experimental production, value of iron); Crew and Salter 1993 (new type with welded tips, other possible alloy types).

Only the paper by Allen gives a comprehensive catalogue and a detailed discussion of the variety of bar types. Although his recording of the bars relied heavily on information provided to him by museums and other correspondents, he anticipates many of the points made by later writers. Perhaps the most important aspect of the present study has been a detailed examination and recording of a large proportion of the surviving bars. This has allowed the definition of distinct varieties of bar amongst those already catalogued by Allen and the recognition of several new types. It is now possible to more fully integrate the typological and metallurgical evidence and to discuss the technological implications of these bars. Some additional insight into the nature of currency bars has also been provided by a programme of experimental work, during which several reproduction bars have been made.

Terminology

Workers in different European countries use a variety of terms for this material, which are usually purely descriptive. It is unfortunate that the term 'currency bar' was introduced in Britain, since it has a functional implication which cannot really be sustained and which, at best, is only a partial explanation for the use and significance of these bars. One of the most satisfactory general definitions of the term is that used by Swedish scholars, that these bars are "iron which has been hammered out into a particular shape but which cannot be interpreted as a utilitarian object" (Hallinder and Haglund 1978, 30).

There is a variety of intermediate products between the reduction of the ore and the final smithed product and there is some confusion in the terms used for them in different languages. Part of the problem lies in the use of terminology which is influenced by modern iron-working practices and concepts. Although there is a need for further definition and clarification of this terminology, it will probably never be possible to establish a single comprehensive system.

In Britain the terms which are normally used, and which are still evolving, are:

raw bloom for the first product from the furnace, a spongy mixture of iron and slag

smithed bloom for partly refined blooms which still retain some of their original shape

billet for iron which has been smithed to a compact sub-rectangular block

bar for relatively thin flat bars which have been partially or fully elongated

currency bar for iron which has a distinctive shape, usually with a socket at one end.

Examples survive of all these forms of partially smithed iron and, at different periods, all can be argued to have been traded in the intermediate form. In this paper, only the forms of iron which have been smithed into a deliberate and distinctive shape will be discussed.

Numbers and types of currency bars

In total more than 1500 bars are now known from Britain, including two spitzbarren of continental type, found at some 68 sites. Only about 400 of these bars survive, scattered in a wide variety of collections, and over the past three years about 60 % of the surviving bars have been examined in detail and drawn to scale.

More than 20 distinct types can now be recognised, distinguished by their shape, dimensions, socket form and tip form. Although these types still fall into the three broad classes defined by Allen, it is clear that a new terminology is necessary. The type names proposed in this paper are based on the sites of the main hoards or individual find spots (Figs. 1 and 2).

Nearly 90 % of the bars have been found, usually by accident, as hoards and the hoards of bars always contain the same type of bar. Some two-thirds of total number of bars are from hillforts and about 10 % of the bars have been found during the excavation of a variety of settlement types.

At 14 sites fragments of currency bars have been found, some with chisel-cut ends, clearly a result of bars being used as stock for manufacturing other objects. Cut fragments of bar are rarely found on the same sites as hoards, but ten or eleven of the sites with fragments also have complete bars. The identification of a fragment as part of a currency bar can usually only be made when there is part of the socket surviving. This is usually the case, as the forged socket end of a currency bar is the least useful part when the bar is re-forged. Segments of plain bar are rarely distinctive enough to be confident of their interpretation.

In numerical terms the "sword-shaped" bars account for over 40 % of the total and the "spit-shaped" bars account for some 50 % of the total. These can be sub-divided with some confidence into a variety of types which are both typologically, metallurgically and regionally distinctive. This is shown clearly by the bars from Danebury, Beckford and Gretton (types A, B and C). Although their sockets are all

* Snowdonia National Park, Pays de Galles (Grande-Bretagne).

superficially similar, consideration of *all* of the physical attributes of complete bars allows a clear distinction to be made. This is confirmed by their metallurgical examination, which demonstrated long ago that these bars were of distinct metal types, smelted from different ores (Hedges and Salter 1979). Although the Danebury and Gretton bars are generally similar in that they are high phosphorus iron with a large number of slag inclusions, the Beckford bars have no phophorus, a high carbon content and they have been very well forged.

There are, in addition, a number of other equally distinctive types which are known from only a small number of examples. Allen found difficult to accept some these as currency bars because of the lack of collaborative evidence from hoards (Allen 1967, 312). However, this would also be the case with types C, F, H and K if large hoards had not been found. For example, the Meon Hill and Malvern hoards account for 97 % and 99 % of each type. In the case of type K, this was only known previously from four badly damaged fragments from a 19th century hoard. The recent discovery of a hoard of identical bars from Coffinswell, which has an unusual metal composition, has confirmed that this is a distinctive type of bar with a localised distribution.

This should give more confidence in accepting some of the other types, such as N, S and R, which are known from only a very small number of examples, but have such a distinctive shape that they can hardly be anything other than currency bars.

The problem of the so-called "plough-share" bars was recognised by Allen. Some of them, such as types M, N and S are certainly not functional plough-shares. Types L and P seem to be unnecessarily long and heavy, and type Q seems to be rather slight, if they were plough-shares. It is very difficult to come to a firm conclusion about some of these bars. It may prove that some are indeed plough-shares, but equally it may be that other forms which have been accepted as plough-shares may be re-interpreted as currency bars. A thorough and critical review of the evidence is required.

Size and weight of the bars

Only about 120 of the bars are complete enough for meaningful measurements of length and weight. The weights are clearly a problem, since some bars have been recorded with their corrosion products and some bars have been recorded after conservation. Also, in a large number of cases, the bars are not complete — fragments of the socket end, which are particularly prone to corrosion, are frequently missing. Nevertheless, the scatter diagram (Fig. 3) shows a significant clustering of the main types. The use of additional discriminants for principle component analysis would undoubtedly show a much stronger degree of clustering.

Experimental work has indicated a reason for the similarity of weight of each type of bar, previously thought to be an indication of the value of a bar. Two reproduction bars have been made under the same conditions (i.e. the same ore, the same furnace, the same operating conditions and the same blacksmith), but one year apart, and they have almost identical weights of 510 and 516g (Crew 1991 and Crew and Salter 1993). It is clear that the consistency of weight in ancient currency bars is a result of the use of a well established and frequently repeated smelting, refining and forging cycle. Considering the size of known prehistoric furnaces, most bars are probably the result of a single production cycle. Different ores, furnaces designs, operating conditions and smithing procedures would result in blooms, and finished bars, of different sizes.

There is little doubt that the bars would have been used as a medium of exchange and barter — hence the comment by Caesar. The different types of bars, depending on their source, metal type and degree of refinement may also have had different values. However, the old concept that the bars had a series of standard weights and that they were used as a currency, in the conventional sense of that word, is clearly no longer tenable.

Metallurgical Analysis

Metallurgical and slag inclusion analysis has now been carried out on a large number of bars (Hedges and Salter 1979, Ehrenreich 1985). The sample size, method of examination and the elements analysed for varies and for some types of bar only a small number has been examined. However, we have some indication of the metal type of perhaps 75 % of the bars. The results indicate a strong correlation between the shape of the bars and their metal type. Many of these analyses, however, have been carried out on very small samples and for a restricted range of elements. The results can be potentially misleading as the compostion, especially of phosphorus irons, can vary significantly across a bar (Crew and Salter 1993).

Using only the phosphorus content as an indication of metal type, three main groups can be distinguished. Types A, C and E have a high phosphorus content and account for about 35 % of the total bars. The bars found in the Northamptonshire area are almost certainly made from local siderite ores. There are indications that some of the more southerly finds of type A bars may also have been traded from this region, but there may have been other ore sources.

Types B and F, and possibly H and N, have a low phosphorus content and account for between 35 and 53 % of the total bars. Their strongly clustered distribution indicates that the Forest of Dean may have been a possible source of the ore.

Types K and M have a moderate phosphorus content and account for only about 7 % of the total number of bars. It is likely that each of these types is the product of a distinctive ore source, as indicated by the distinctive metal and south-western distribution of type K. The type U 'hooked billets' may also have a moderate phosphorus content, but as they have a variable shape and a wide distribution they may have been made at a number of places.

In addition, there are other distinctive prehistoric metal types known from the analysis of objects for which no currency bar metal type is yet known. A good example is the high cobalt, high nickel group of artefacts from Danebury and other sites (Salter, 1989).

The form of currency bars

It is necessary to explain why currency bars have been forged into their distinctive shapes. Again, experimental work has given some insight into this problem. To make a bar it is necessary to refine and weld the raw bloom into compact iron. It can then be drawn down to a thin bar and one end can be thinned, splayed out and bent to form the socket. Occasionally the other end is folded back on itself and welded. These are all basic blacksmithing operations which would be used to make objects from the bars. Any faults in the iron, caused by an excess of slag inclusions, too much sulphur or phosphorus, would be clearly visible as cracks or tears in the bar, especially where it has been thinned and bent.

It is clear that the forging of iron into a currency bar form was a demonstration to the eventual user that the iron was of good quality. It is also clear that the bars were intended for trading or exchange over some distance, in a way in which the producer and user had no direct contact. If the iron was being used only in the immediate locality, there would have been sufficient contact between the producer and user to avoid the need for this demonstration of quality. There is also a strong implication that in the trading process the bars passed through

the hands of intermediaries, thus breaking this personal link.

As well as the various currency bar types, two types of iron billet have been recognised, which are clearly blooms which have been partially refined and one end forged down, either to a hook or to a long point. The type U hooked billets have been interpreted previously either as field anvils or as weights, but it is clear that they are another form of trade iron. When a raw bloom is fully smithed to bar some 75 % of the material is lost (Crew 1991) and this would not have been done unless it was thought necessary. Whereas the long thin currency bars would have been suitable for forging into blade artefacts and smaller objects, the trade billets were presumably intended for making into larger bulkier objects, such as hammers, picks, axes or plough-shares.

It is also necessary to explain why the currency bars have such a variety of form. It has already been argued that metallurgical analysis shows that different bars were made from different ore types. It seems most likely that the bar and socket shapes are a result of workshop or regional traditions and examples of variations in smithing technique can be clearly seen, especially in the making of the sockets. For example, types A, C and K are made by bending and rolling the socket on the surface of the anvil, whereas types B, E and F have narrow tube sockets, formed around thin rods of wood. In the case of types E and S, the surviving bars are so similar that they were probably made in the same workshop, if not by the same blacksmith. Type A bars, however, survive in large numbers, and have a wide distribution and a marked variation of socket type, which may indicate that they were produced in a number of workshops, but following a regional tradition.

Thus the shapes of the different bars are almost like a trade-mark, showing not only the quality of the iron but indicating its source and type. There is little doubt that the distinction between low phosphorus iron and high phosphorus iron was indicated in this way. These two types of iron have different working properties and would have been used for different kinds of object.

It is only recently that archaeometallurgists have begun to break away from the modern metallurgical concept that phosphorus iron is of poor quality. Most British iron ore sources have a significant phosphorus content and it is clear that this iron was used extensively and, in some cases, preferred. This has already been recognised in the selection of high phosphorus iron for the manufacture of large sickles in Southern Britain (Salter and Ehrenreich 1984). Phosphorus hardens iron without the need for sophisticated quenching and tempering techniques, the iron takes and holds a good edge and it would have been relatively cheaper than steel. Other alloys are also corrosion resistant, as can be clearly seen in a few superbly well preserved currency bars. Arsenic is normally only present at trace levels, but it has the property of concentrating significantly in the surface of smithed iron by a process of selective oxidisation. This gives a clean, hard surface which would have been very desirable (Crew and Salter 1993).

It is possible that more detailed metallurgical work will define other distinct alloy types. Although the working properties of different bloomery irons are very poorly understood, it is possible that prehistoric blacksmiths intuitively recognised and appreciated a wide range of iron types, as perhaps indicated by the variety of currency bars. However, a great deal of experimental and practical work will be required to demonstrate this.

The distribution of the bars

Now that a wider range of bar types can be defined, the distribution of some types can be seen to be significant (Figure 4). Types C, E and T all occur in the Northamptonshire ore field and presumably reflect the exploitation of a variety of local ore sources. Types K and S are very localised and have presumably been found in their region of origin, where there is at the moment little evidence for early iron-working.

Perhaps the most significant distribution is that of the large numbers of low phosphorus types F and G, which cluster around the mouth of the River Severn. As the Forest of Dean area is one of the very few sources of low phosphorus ores in Britain it seems very likely that Dean ores were used. It is notable, however, that no bars have been found within Dean itself. This might indicate either that we are seeing a pattern of trade or, perhaps, that the raw iron has been transported and the currency bars have been manufactured elsewhere.

In contrast, the phosphorus-rich type A bars have a much wider distribution over south-central England. Again, this may reflect trade, but it is also likely that these bars were being made in a number of workshops, using the widespread sources of phosphorus-rich ores. These bars are not particularly well forged iron, as they have a large number of slag inclusions, and it may be that they were regarded as a basic stock iron, in contrast to the usually better forged iron of other types.

There are clear indications of the trade or exchange of currency bars, shown by the 13 sites where more than one type of trade iron has been found. In each case bars of a different metal composition have been found. The nearby sites of Meon Hill and Salmonsbury have large hoards of one type of bar and a small number of examples of another type. Danebury and Hunsbury are of particular interest as each site has a variety of trade iron forms and each site has a wide range of artefacts which have been demonstrated to have been made from a number of different metal types, some having been imported from a considerable distance (Salter 1984, Ehrenreich 1985). Hunsbury is of particular interest as it is located literally on a good source of phosphorus-rich siderite ore, yet a high proportion of iron objects of moderate and low phosphorus metal was found on the site.

There are also tentative indications of trade over longer distances. There is an example of a hooked billet from France, which is remarkably similar to one of the Meare billets. The long pointed billet from Lesser Garth is unique in Britain, but it is remarkable similar to, though rather heavier than, a number of objects from the Tiefenau-Bern hoard (Muller 1990). There are also two examples from Portland of the continental type double-pointed ingots, which are a clear example of cross-channel trade, presumably from Brittany.

Problems

There are many unresolved problems relating to currency bars and trade iron. We have no idea where they might have been made. In Britain we know of very few prehistoric primary production centres and those known could not have produced enough iron to make even the known currency bars. Hillforts rarely have evidence for smelting, but several forts have extensive evidence for smithing, including cut fragments of currency bars, and large numbers of iron objects. Clearly the inhabitants of the forts were importing iron and they may have played an important role in the control of trade, manufacture and the redistribution of iron and iron objects.

The distribution of the currency bars is restricted mainly to the southern part of England. Perhaps this was the only area which developed a sufficiently strong economy and a sophisticated trading network for the use of currency bars to develop. However, this is not supported by other archaeological evidence. Even in the south there are areas like the Forest of Dean and the Weald, for example, which must have produced a considerable quantity of prehistoric iron and yet have no recognised forms of trade iron. Areas like East

Yorkshire and north-west Wales are also known to have been producing iron in the prehistoric period and it is difficult to believe that they were not part of the trading network. In most of these areas part-smithed blooms and billets have been found, though they are not well dated. This raises the interesting possibility that primary production and the manufacture of currency bars was not carried out at the same sites or even in the same locality. Further archaeological and metallurgical work might help clarify this.

One of the most difficult problems is that of chronology, as very few currency bars have been found in dateable contexts. Until the last century BC the quantity of iron objects of any kind from Britain, except from ritual contexts, is small. It is only then that iron production seems to reach a sufficiently high level for there to be enough metal in circulation for a sophisticated trade to develop. What was the relationship of iron to other trade items and to the use of coinage in southern Britain ? Were the hoards deposited when iron was still regarded as a high value material, or were they a later ritual activity, when the iron was a symbolic representation of wealth ?

The decline of the use of trade iron in the form of currency bars probably came about as a result of increasing levels of production of iron, with a corresponding decrease in its relative value, towards the end of prehistoric period. Although the use of currency bars, in the sense described above, seems to have died out before the Roman invasion, the use of bar iron for trading and stocking purposes continues until the present day.

Acknowledgements

For many years Dr Chris Salter, University of Oxford, has been carrying out analytical work on the British currency bars and I should like to thank him for his encouragement and frequent discussion of the problems. I should also like to acknowledge the help of the many curators and keepers of museum collections whose willing co-operation has made this project possible. Finally I should like to thank the British Academy, the Snowdonia National Park and the Historical Metallurgy Society for supporting this research project.

Currency Bars and other forms of trade iron from Britain (Figs 1 and 2)

A. Danebury/Hod Hill type. About 500, several large hoards, many individual finds. From variety of sites in south-central areas. Tapering blades, variety of socket types (long tubes with slack shoulder, short splayed tubes with wider shoulder). 780-850 x 35-45 x 4-5mm ; 450-700g. *High P, low C metal.*

B. Beckford type. 10, from one hoard. Herefords. Long blades with slight taper, some slightly thicker at end. Parallel sided sockets with wood. 800-880 x 30 x 5mm ; 600-700g. *Low P, high C metal.*

C. Gretton type. 48 from one hoard and several other sites. Northants. Blades with slight taper. Parallel sockets (mostly damaged). 700-750 x 35-40 x 4-5mm ; 700-750g. *High P, high C, variable As metal.*

D. Bearwood type. 5 from one hoard. Dorset. Long tapering blades, long thin tube sockets with wood. c. 850 x 30-40mm.

E. Orton type. 9 from one ?hoard. Northants. Parallel sided blade with welded tip. Small, short socket, with wood. 660-730 x 30 x 4mm ; 460-630g. *High P, variable C metal.*

F. Meon type. Over 500, from 3 large hoards and scattered finds. Western and southern areas. Long thin blades, short irregular sockets with wood. 670-750 x 15 x 3mm ; 145-165g. *Low P, low C metal.*

G. Ditches type. ?16, from one hoard and other sites. Western-southern areas. As Meon type, but wider and thicker blade. 700-760 x 25-29 x 3-4mm ; c.350-400g.

H. Malvern type. Over 300, from 2 hoards and rare scattered finds. Worcs. Short parallel blades, short sockets often pinched and irregular. 525-575 x 19-22 x 3-4mm ; 240-300g.

J. Glastonbury type. 1, Somerset. Long thin blade, short socket with slack shoulder. 690 x 25 x 3mm ; 238g.

K. Coffinswell type. Over 100, from two hoards. Devon. Broad heavy blade, with short round socket. 580-600 x 37-42 x 5-8mm ; 800-900g. *Moderate P, high As, high C metal.*

L. Maidenhead type. ?10, mainly from river Thames. Thick blades of variable length, some with flanged edges, with short winged sockets. 750-785 x 40 x 6-8mm ; 930-1210g.

M. Datchet type. ?6, mainly from river Thames. Shorter, tapering blades, with winged sockets. 540-600 x 44 x 6-8mm ; 800-865g. *?moderate P, low C metal.*

N. Llyn Cerrig Bach type. 4, from lake deposit, north Wales. Thick blade with welded tip and winged sockets. 620 x 32 x 7mm ; 820g. *?low P metal.*

P. Park Farm type. 2. Long thick blades, with heavy sockets. 680 x 40 x 11-15mm ; 1036-1451g

Q. Glastonbury rod type. ?4, south-west. Thin rods with tapering socket. 535 x 20 x 8.5mm ; 540g.

R. Llanstephan type. 1, S. Wales. Short ovate blade with square edges and long socket. 304 x 55mm ; 424g.

S. Ely type. 2, Cambs. Leaf-shaped blade with flanged edges. Long U-shaped sockets. 620 x 54mm ; 726g.

T. Brixworth type. ?2, Northants/Oxon. Short lenticular blade with heavy socket. 453 x 36mm ; 430g.

U. Meare type ('hooked billets'). 8, variable types, mainly central-southern sites. Partly forged blooms, with one end drawn down and bent over. 125-165 x 45-70 x 30-50mm ; 1200-1640g. *?mod P, low C metal.*

V. Lesser Garth type ('pointed billets'). 1, south Wales. Partly forged bloom, with one end drawn to long point. 358 x 47 x 31mm ; 1405g.

W. Portland. 2, Dorset. Continental double pointed ingots (not illustrated). 6.3-6.8kg. *Low P, low C metal.*

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Résumé

Environ 1500 *Currency Bars* et autres types de *fer de commerce* ont été découverts en Bretagne, y compris deux lingots bipyramidaux de type continental. Une étude détaillée de plus de la moitié des barres subsistantes a montré qu'il y avait au moins vingt types distincts qui se caractérisent par leurs dimensions, la forme de la soie et quelquefois par la soudure de leurs extrémités. Deux nouveaux types de fer de commerce ont été reconnus, qui consistent en billes forgées avec une extrémité forgée soit en forme de crochet soit en forme de longue pointe.

Il existe une étroite corrélation entre la dimension, le poids, la forme des barres et leurs composition métallique. Cela suggère qu'il s'agissait de produits régionaux fabriqués à partir de minerais locaux. Une forte proportion des barres a été découverte dans les sites fortifiés et dans les trésors. Quelques sites ont livré plusieurs types de fer de commerce de compositions différentes. Plusieurs fragments de barres coupées ont été découverts, ce qui montre clairement qu'ils ont été utilisés comme stock de fer.

Le forgeage d'une longue barre plate, la fabrication de la soie et la soudure des extrémités démontrent la vraie qualité du fer pour l'utilisateur final. Cela suggère que les compositions des métaux pouvaient avoir eu des qualités spécifiques pour le travail, qualités qui auraient été reconnues par les premiers forgerons. L'image qui ressort de tous ces constats est celle d'un commerce du fer plus sophistiqué, plus organisé et de rayonnement plus large que celle qui avait été proposée jusqu'ici.

Abstract

About 1500 currency bars and other forms of trade iron have been found in Britain, including two double-pointed ingots of continental type. Detailed examination of over half of the surviving bars has shown that there are at least 20 distinctive types. These can be distinguished by their dimensions, the shape of the socket and, sometimes, by the welding of the tips. Two new types of trade iron have been recognised, which consist of partially forged billets with one end forged either to a hook-shape or to a long point.

There are close correlations between the length, weight, shape and the metal composition of the bars. It is suggested that the bars were regional products smelted from local ores. A high proportion of the bars are found in hillforts and in hoards. Some sites have several types of trade iron of different composition. Several fragments of bars have been found which is clearly a result of them having been used as iron stock.

The forging of a long flat bar, the shaping of the socket and the welding of the tips are all demonstrations to the eventual user of the quality of the iron. It is suggested that some metal compositions could have had distinctive working qualities which would have been recognised by early blacksmiths. The picture which is emerging is of a more sophisticated, more organised and more widespread trade in iron than has been previously appreciated.

Mots-clés / Keywords

Prehistoric, Hillforts, Trade iron, Currency bars, Billets, Hoards, Phosphorus, Arsenic

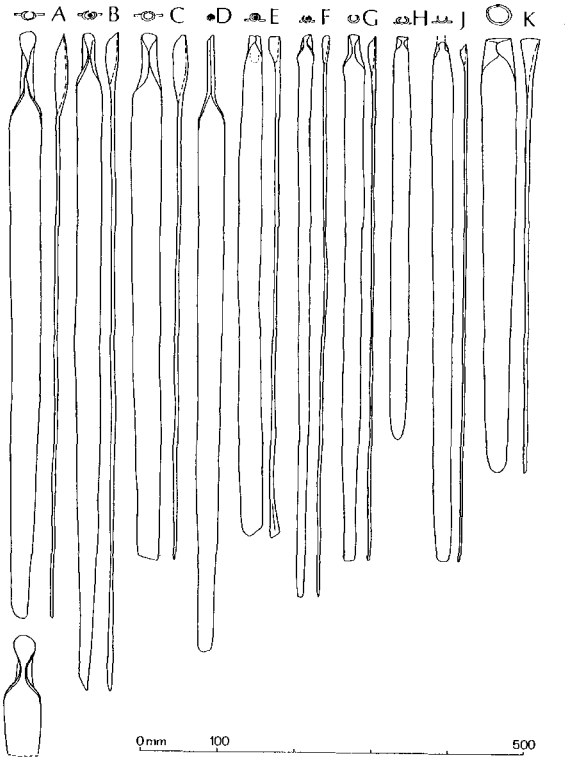

Fig. 1.— A-K. Currency Bars from Britain of *sword* and *spit* types. Scale in mm.

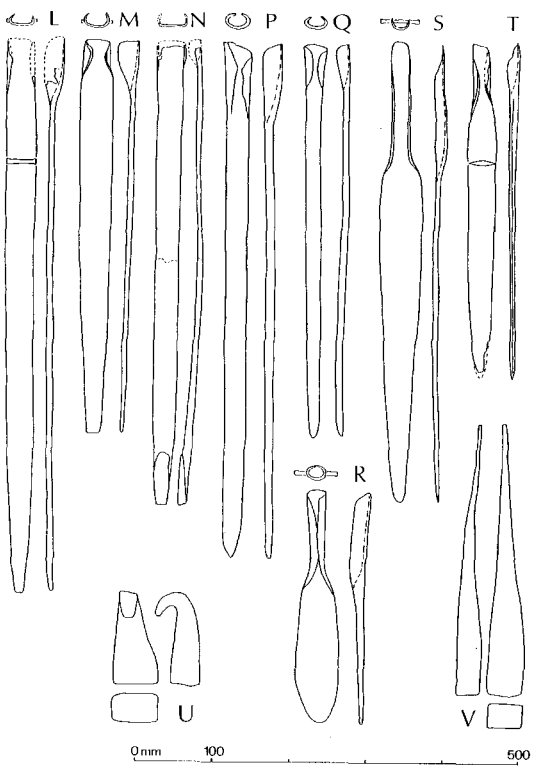

Fig. 2.— L-T. Currency Bars from Britain of *plough-share* type and other forms of trade iron. Scale in mm.

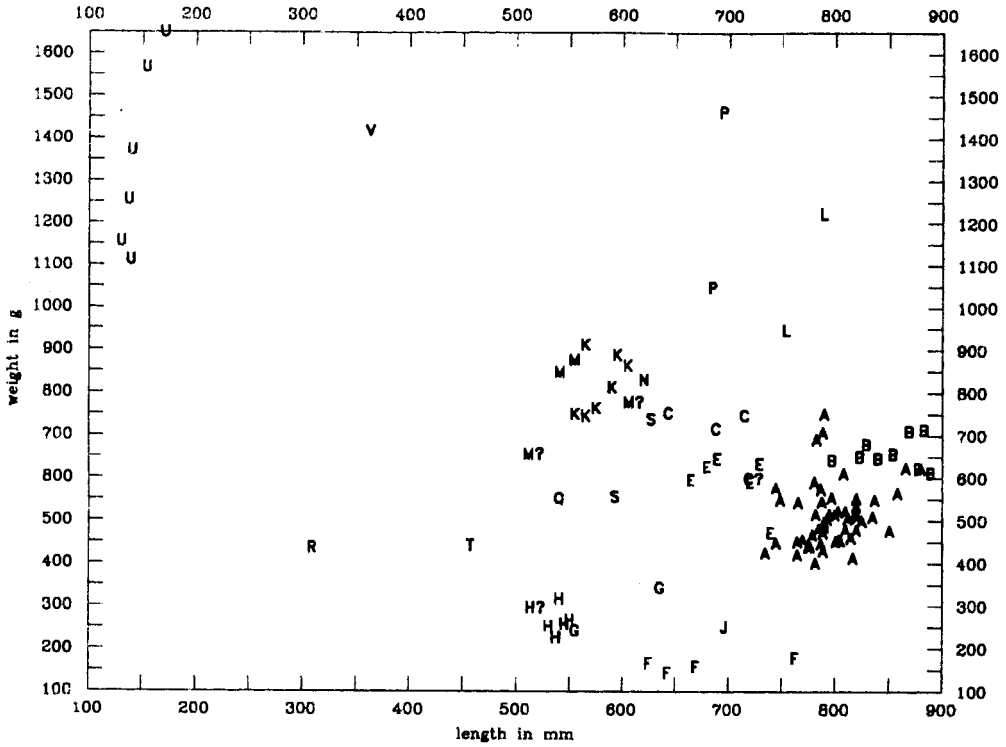

Fig. 3. Currency Bars from Britain, length x weight. For type letters see Figs. 1 and 2.

Fig. 4. Currency Bars and other forms of Trade Iron from Britain.
The letters refer to the types described in Fig. 1 and Fig. 2. Crosses are bars of indeterminate type. Small letters, 1-5 bars. Small letters in circles, hoards of up to 50 bars. Large letters in circles, hoards of more than 50 bars. SC-TY are the 100km squares of the National Grid Reference System.